

REMARKS***Summary of the Amendment***

Upon entry of the above amendment, claim 6 will have been amended. Accordingly, claims 6 – 25 currently remain pending.

Summary of the Official Action

In the instant Office Action, the Examiner has rejected claims 6 – 12, 16, and 20 under 35 U.S.C. § 112, second paragraph, and has rejected claims 6 – 25 over the applied art of record. By the present amendment and remarks, Applicant submits that the rejections have been overcome, and respectfully requests reconsideration of the outstanding Office Action and allowance of the present application.

Traversal of Formal Rejection Under 35 U.S.C. § 112, Second Paragraph

Applicant traverses the formal rejection of claims 6 – 12, 16, and 20 under 35 U.S.C. § 112, second paragraph, as being indefinite.

By the present amendment, Applicant's independent claim 6 has been amended to even more clearly describe this embodiment of the invention. In particular, Applicant notes that claim 6 has been clarified to recite that the at least one resonator is structured and arranged to dampen vibrations and that the pre-chamber is connected to the combustion chamber to dampen vibrations via at least one passage channel. Further, support for these amendments can be found in the original disclosure, see Substitute Specification, ¶¶ [0022] – [0030] for clarification of damping via at least one resonators, and Substitute Specification ¶ [0030] for clarification of damping via at least one passage between pre-chamber and combustion chamber.

In view of the foregoing amendment, Applicant submits that the formal rejection of claims 6 – 12 under 35 U.S.C. § 112, second paragraph, is moot. Accordingly, reconsideration

and withdrawal of the pending rejection is requested.

With regard to claim 16, Applicant notes that the Examiner has not read the claim in its proper context or even in its entirety. That is, Applicant's claim 16 recites, *inter alia*, wherein *the opening communicating with the pre-chamber* comprises a circumferential opening. Thus, contrary to the Examiner's allegation, claim 16 does not further define "the opening," but instead further defines, "the opening communicating with the pre-chamber." While Applicant acknowledges that claim 14 recites two openings *in the alternative*, i.e., "one of: an opening communicating with the pre-chamber; and an opening communicating with an open area of the injection head," one ordinarily skilled in the art would readily understand that claim 16 is clearly and unambiguously directed further defining to "the opening communicating with the pre-chamber," recited in claim 14.

Similarly, Applicant submits that the Examiner's confusion with regard to claim 20 is the result of not reading the entire claim in its proper context. That is, for those ordinarily skilled in the art, the phrase "at least one of A or B" is common parlance for "A and/or B." Thus, Applicant submits that one ordinarily skilled in the art reviewing the original disclosure and claim 20 would interpret and understand this claim language (i.e., wherein the at least one resonator comprises a plurality of sleeves at least one of oriented along a direction of gas flow and extending into the open area of the injection head) as: ---wherein the at least one resonator comprises a plurality of sleeves oriented along a direction of gas flow and/or extending into the open area of the injection head---, so as to further define the arrangement of the at least one resonator.

Accordingly, Applicant further submits that the formal rejection of claims 16 and 20 under 35 U.S.C. § 112, second paragraph, is improper and should be withdrawn. Accordingly,

reconsideration and withdrawal of the pending rejection is requested.

Further, Applicant requests that the Examiner confirm that claims 6 – 12, 16, and 20, as well as all of the pending claims, are fully in compliance with the formal requirements of 35 U.S.C. § 112, second paragraph.

Traversal of Rejection Under 35 U.S.C. § 102(b)

Applicant traverses the rejection of claims 6 – 25 under 35 U.S.C. § 102(b) as being anticipated by VUILLAMY et al. (U.S. Patent No. 5, 404,715) [hereinafter “VUILLAMY”]. The Examiner asserts that, with regard to claims 6 – 13, elements 132 and 136 depicted in Fig. 4 of VUILLAMY are resonators connected to a prechamber 31 in a vibration-damping manner. The Examiner also asserts that, with regard to claims 14 – 25, element 40 is a resonator structured and arranged to dampen vibrations of the combustion chamber. Applicant traverses the Examiner’s assertions.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See *The Manual of Patent Examining Procedure* [hereinafter “MPEP”] § 2131. Applicants submit that the applied art does not show each and every element of the claimed invention.

Applicant’s independent claim 6, as amended, recites, *inter alia*, at least one resonator structured and arranged to dampen vibrations being connected to a pre-chamber, such that the pre-chamber is connected to the combustion chamber to dampen vibrations via at least one passage channel. Further, Applicant’s independent claims 14 and 25 recite, *inter alia*, a combustion chamber, an injection head arranged upstream of the combustion chamber, a pre-chamber arranged upstream of the injection head, and at least one resonator structured and

arranged to dampen vibrations of the combustion chamber and comprising one of an opening communicating with the pre-chamber; and an opening communicating with an open area of the injection head. Applicant submits that VUILLAMY fails to show each and every recited element of at least the above-noted claims.

In the pending rejection of claims 6 - 13, the Examiner asserts that Fig. 4 of VUILLAMY discloses at least one resonator 132 or 136 connected to a pre-chamber 31. However, while a fair reading of VUILLAMY reveals that elements 132 and 136 of VUILLAMY are described as a single injection plate, there is no apparent disclosure that the injection plate 132, 136 forms a resonator or that the injection plate is structured and arranged to dampen vibrations in the pre-chamber. In this regard, this single injection plate is described by VUILLAMY as being sealingly connected at an upstream end of single cylindrical partition 171, i.e., in an intermediate zone between central portion 132 and peripheral portion 136. However, Applicant notes that the Examiner has not identified any express or implied in VUILLAMY that even arguably disclose injection plate 132, 136 is or contains a resonator for dampening vibrations, as recited in the independent claims.

With regard to claims 14 - 24 and 25, Applicant notes that the Examiner asserts that Fig. 1 of VUILLAMY shows a resonator 40 arranged to dampen vibrations of the combustion chamber. Contrary to the Examiner's assertions, Applicant notes that the Examiner has not identified any express or implied disclosure in VUILLAMY that injectors 40 formed in the injection plate actually form a resonator, or that such openings dampen vibrations of the combustion chamber. As described by VUILLAMY, the injectors 40 are merely disclosed as to inject oxidizer into annular cavity 25. Applicant notes that there is no arguable suggestion of injectors 40 being resonators or being arranged for vibration damping.

In fact, Applicant notes that a careful review of the applied art reveals that there is no apparent disclosure in VUILLAMY of vibrations arising in the described rocket engine for which vibration damping would be needed or even desired, nor is there any disclosure of any structure by VUILLAMY that would necessarily act to dampen vibrations. Thus, Applicant submits that one ordinarily skilled in the art reviewing VUILLAMY would find no arguable disclosure of at least one resonator for dampening vibration, such that the applied art cannot even arguably be understood to anticipate the embodiments of the invention recited in the pending claims. Moreover, as VUILLAMY fails to provide any arguable disclosure that injection plate 132, 136 or injectors 40 structured to necessarily act as resonators and dampen vibrations, one ordinarily skilled in the art would not reasonably interpret VUILLAMY as inherently disclosing the elements recited in Applicant's claims that are not described in the applied art.

Because VUILLAMY fails to show at least the above-noted features, and fails to disclose that such missing features are inherent in the disclosed device, Applicant submits that the applied art fails to show each and every recited elements of the claims. Thus, Applicant submits that the Examiner has failed to establish an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(b), such that the pending rejection should be reconsidered and withdrawn.

Further, Applicant submits that claims 7 – 13 and 15 – 24 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicant submits that VUILLAMY fails to anticipate the embodiments of the invention recited in at least claims 7 – 13 and 15 – 24.

Accordingly, Applicant requests that the Examiner reconsider and withdraw the rejection

of claims 6 – 25 under 35 U.S.C. § 102(b) and indicate that these claims are allowable.

Application is Allowable

Thus, Applicants respectfully submit that each and every pending claim of the present invention meets the requirements for patentability under 35 U.S.C. §§ 102 and 103, and respectfully request the Examiner to indicate allowance of each and every pending claim of the present invention.

Authorization to Charge Deposit Account

The undersigned authorizes the charging of any necessary fees, including any extensions of time fees required to place the application in condition for allowance by Examiner's Amendment, to Deposit Account No. 19 - 0089 in order to maintain pendency of this application.

CONCLUSION

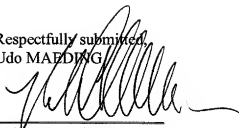
In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicants' invention, as recited in each of claims 6 – 25. The claims have been amended to eliminate any arguable basis for rejection under 35 U.S.C. § 112. In addition, the applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Further, any amendments to the claims which have been made in this response and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be

appropriate.

Respectfully submitted,
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